



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,783	02/02/2007	Toru Torii	296452US3PCT	4185
22850	7590	12/09/2010		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER HAIDER, SAIRA BANO	
			ART UNIT 1765	PAPER NUMBER
			NOTIFICATION DATE 12/09/2010	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,783	<b>Applicant(s)</b> TORII ET AL.	
	<b>Examiner</b> SAIRA HAIDER	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-14, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-14 and 19-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/24/2010</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 9-14 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Quake (US 2002/0058332).
3. In reference to claims 9-14, Quake discloses an embodiment wherein a first droplet extrusion region may introduce droplets of a first sample into a flow of fluid (e.g., oil) in the main channel and a second droplet extrusion may introduce droplets of a second sample into the flow of the fluid in the main channel and so forth [0019]. Wherein the first droplet extrusion region reads on the claimed first dispersion phase supply channel, the flow of fluid in the main channel reads on the claimed first continuous phase supply channel, and the second droplet extrusion region reads on the claimed second dispersion phase supply channel.
4. In reference to the claimed control of the phases as per claims 9, 12, 13, and 14, Quake notes that the introduction of the droplets through the different extrusion regions may be controlled [0119]. Wherein Quake describes the control mechanism, stating that by controlling the pressure differences between the oil and water sources at the droplet extrusion region, the size and the periodicity of the droplets generated may be regulated [0115]. Quake further notes alternatively, a valve may be placed at or coincident to either the droplet extrusion region or the sample inlet connected thereto to control the flow of solution into the droplet extrusion region, thereby controlled the size and the periodicity of the droplets [0115]. Hence Quake discloses the claimed control devices connected to the first and second dispersion phases and notes the control of the periodicity of the respective droplets.

Art Unit: 1765

5. In reference to the claimed sequential production of the droplets as per claims 9, 12, 13, Quake notes that the introduction of the droplets may be controlled, so that for example the droplets combine (allowing, for example the enzyme to catalyze a chemical reaction of the substrate) [0115]. Hence in order to have the droplets combine, the microdroplets must be sequentially produced otherwise the droplets would not be able to combine as described by Quake.

6. In reference to claims 10 and 11, Quake describes the intersection of the first dispersion phase into the main channel (the continuous phase) and the intersection of the second dispersion phase into the main channel (the continuous phase). Wherein B shows the cross intersection, specifically the T-junction intersection of the main channel(continuous phase), the first phase and the second phase [0292].

7. In reference to claims 12 and 13, which notes the production of microdroplets of different components, Quake discloses that the droplets introduced at the different droplet extrusion regions may be droplets of different fluids which may be compatible or incompatible [0119].

8. In reference to claim 19, Quake discloses microfluidic devices comprising sorting schemes, wherein two different droplets (reads on the claimed first droplet and satellite droplet) are produced, enter an expanded input region and then are separated via a branching channels [0113-0114; 0131, 0132; Fig 14A & B; 15A and B]. Wherein the first and second droplet extrusion regions of Quake combined read on the claimed microdroplet producing portion. In Fig 14A& B and 15A& B, the main channel leading up to the expansion portion reads on the claimed microdroplet supply channel; and the expansion and branching portion of Quake read on the respectively claimed expansion and branching portions. Wherein the collection portion of Quake is connected to the front end of the expansion portion and reads on the claimed primary droplet recovery channel.

***Claim Rejections - 35 USC § 103***

Art Unit: 1765

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Quake (US 2002/0058332).

11. Quake applies as discussed above, but fails to disclose the claimed second satellite and second primary droplets. However, Quake notes that two or more droplet extrusion regions can be present which introduce droplets into the main channel, thus the claimed four droplet scheme of claim 20 is taught [0119]. It would have been obvious to one of ordinary skill in the art at the time of the invention to include four droplet extrusion regions to introduce various samples into the main channel as taught by Quake in order to create a sort a variety different samples, including various cells and molecules.

### ***Response to Arguments***

12. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on

Art Unit: 1765

the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAIRA HAIDER whose telephone number is (571)272-3553. The examiner can normally be reached on Monday-Friday from 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James Seidleck/  
Supervisory Patent Examiner, Art Unit 1765

Saira Haider  
Examiner  
Art Unit 1765